Dallimore, J., & Bhatnagar, R. (2018). Bleeding or clotting: an intracranial dilemma. *BMJ Case Reports*. https://doi.org/10.1136/bcr-2017-222781

Peer reviewed version

BMJ Case Reports

Submission template

TITLE OF CASE
Bleeding Or Clotting: An Intracranial Dilemma
DESCRIPTION ***Up to 250 words summarising the importance of the image(s)***
• **We present a complex diagnosis of a 25 year old female with a background of Ulcerative Colitis (UC) at risk of both intracranial haemorrhage and thrombosis.** • **The patient presented to the emergency department having collapsed at work, obtaining a head injury while falling to the floor and suffering an eight minute seizure in the immediate aftermath. The patient had an acute flare of her UC two weeks previously and her medical history included a deep vein thrombosis following a long haul flight and a pulmonary embolism while taking the oral contraceptive pill.** • **The patient denied a headache preceding her collapse, although admitted her head had "felt fuzzy" during the previous two days. Computed tomography (CT) of the head was performed (figures 1A and 1B), revealing patchy haemorrhagic changes in the right frontal lobe. Abnormal hyperdensity of the superior sagittal sinus and of a cortical vein were also noted; the patient underwent Magnetic Resonance Imaging (MRI) of the head and CT venography, confirming intracranial thrombosis with substantial surrounding oedema (figures 2 and 3). The patient was consequently commenced on a heparin infusion.** • **Although a head injury can cause intracranial haemorrhage, our patient had multiple risk factors for thrombosis (UC with recent flare, previous deep vein thrombosis and pulmonary embolism) which, combined with an unusual pattern of intracranial haemorrhage on CT, triggered consideration of the alternative diagnosis of intracranial thrombosis, in which associated haemorrhage is a feature in 30-40% of cases.[1]**
LEARNING POINTS/TAKE HOME MESSAGE ***2 to 3 bullet points – this is a required field***

- **Ulcerative Colitis is an independent risk factor for venous thrombosis with a lifetime incidence of around 6%.[2]**
- **Venous infarction secondary to cerebral venous thrombosis appears as intracranial haemorrhage on imaging in 30-40% of cerebral venous thrombosis.[1]**
- **Plain CT head images provide a diagnosis of cerebral venous thrombosis in approximately 30% of cases; in the event of a normal CT head diagnostic suspicion must guide appropriate further imaging such as CT/MR venography. [3]**

REFERENCES Vancouver style (max 3)

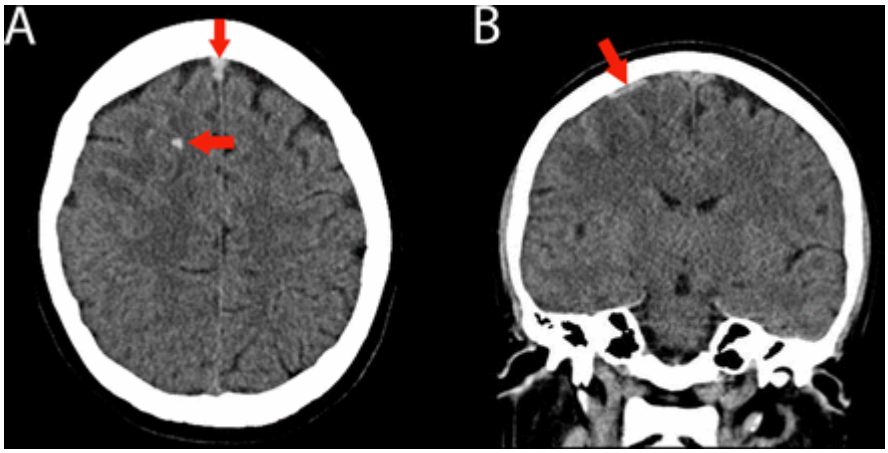
1. Wasay et al. Cerebral venous thrombosis: analysis of a multicenter cohort from the United States. J Stroke Cerebrovasc Dis. 2008;17:49–54

2. Miehsler et al. Is inflammatory bowel disease an independent and disease specific risk factor for thromboembolism? Gut. 2004 Apr;53(4):542-8.

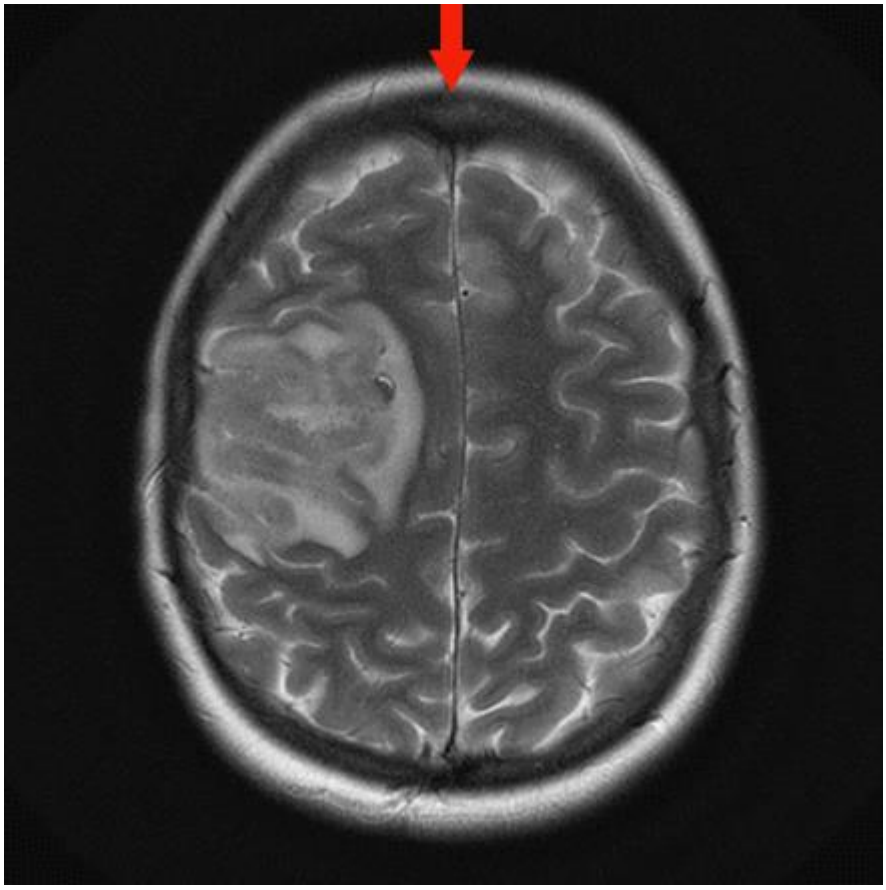
3. Linn et al. Cerebral venous and dural sinus thrombosis*: state-of-the-art imaging. Clin Neuroradiol. 2010 20: 25.

FIGURE/VIDEO CAPTIONS ***figures should NOT be embedded in this document***

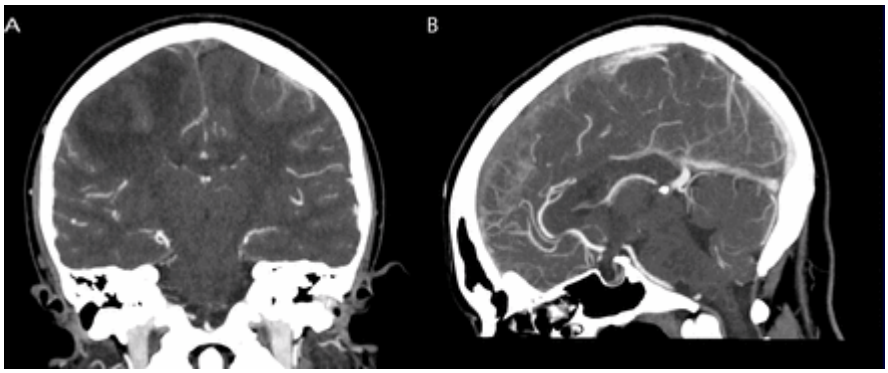
- **Figure 1A: Axial unenhanced CT brain image showing abnormal hyperdense sagittal sinus anteriorly (arrow; compare with the normal low density portion of the sinus posteriorly) and patchy haemorrhagic change in the right frontal lobe (arrow) with subtle low density in frontal lobe due to developing oedema/venous infarction related to the venous thrombosis.**
- **Figure 1B: Coronal unenhanced CT brain image showing an abnormally dense cortical vein above the right frontal lobe (arrow), in keeping with cortical vein thrombosis (associated with the sagittal sinus thrombosis)**



- **Figure 2: Axial T2 MRI image of brain showing loss of normal flow void in sagittal sinus anteriorly (arrow) and substantial oedema/swelling in right frontal lobe with occasional small low signal parenchymal foci consistent with the known minor patchy haemorrhagic change.**



- **Figure 3: Coronal (A) and Sagittal (B) CT venogram of the brain demonstrating the occlusive thrombus in the sagittal venous sinus. A typical 'empty delta sign' is present on the coronal image (A); the sagittal image (B) shows a patent posterior portion of sagittal sinus with occluded sinus more anteriorly.**



Date: 27/9/17

PLEASE SAVE YOUR TEMPLATE WITH THE FOLLOWING FORMAT:

Corresponding author's last name and date of submission, eg,

Smith_October_2013.doc